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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/369,510	08/06/1999	JOHN A HOSSACK	1998P82218 US01	6883
Elsa Keller Siemens Corporation, Intellectual Property Dept. 186 Wood Avenue South Iselin, NJ 08830			EXAMINER FUJITA, KATRINA R	
			ART UNIT	PAPER NUMBER
			2624	
			MAIL DATE	DELIVERY MODE
			07/21/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/369,510

Applicant(s)

HOSSACK ET AL.

Examiner

KATRINA FUJITA

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 40-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 42-46 is/are allowed.
- 6) ☒ Claim(s) 40 and 41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
- Paper No(s)/Mail Date 10/18/2001, 06/17/2002
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This Office Action is responsive to Applicant's remarks received on February 28, 2002. Claims 40-46 remain pending.

35 USC § 101

2. The method of claim 40 requires "generating a first extended field of view image" from "substantially co-planar, partially-overlapping spatial regions". The claimed generating is performed by a computer in that only a computer can execute computationally complex processing of generating "a first extended field of view image" from "substantially co-planar, partially-overlapping spatial regions" and realize the intended purpose of the invention. A reasonable interpretation of the specification indicates that this step, in addition to the other recited steps, require a programmed computer in order to accomplish the intended purpose of the invention, and there is NO disclosed indication of manual and/or mental activity involved. Therefore, claim 40 is tied to a machine and thus a statutory process.
3. The method of claim 42 requires "extracting a time reference based a Doppler characteristic of the image data" and "identifying each frame with a respective phase of

a physiological cycle based at least in part on the time reference". The claimed extracting and identifying is performed by a computer in that only a computer can execute computationally complex processing of "extracting a time reference based a Doppler characteristic of the image data" and "identifying each frame with a respective phase of a physiological cycle based at least in part on the time reference" and realize the intended purpose of the invention. A reasonable interpretation of the specification indicates that this step, in addition to the other recited steps, require a programmed computer in order to accomplish the intended purpose of the invention, and there is NO disclosed indication of manual and/or mental activity involved. Therefore, claim 42 is tied to a machine and thus a statutory process.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Sumanaweera et al. (US 6,159,152) and REFERENCE.

Regarding **claim 40**, Sumanaweera et al. discloses an ultrasonic imaging method comprising:

(a) acquiring image data for a plurality of frames (figure 1, numerals 12-18), each frame identified with a respective phase of a physiological cycle ("cardiac cycle" at col. 4, line 3) in an ultrasound study of the heart, each acquired image belongs to a particular phase in the heart cycle);

(b) generating a first extended field of view image from image data associated with a first phase of the physiological cycle from multiple selected ones of the frames of (a) associated with the first phase of the physiological cycle ("Triggering based on the cardiac cycle or other means for selecting frames of data associated with particular portions of the cardiac cycle may be used to select appropriate frames for combination, such as for creating a panoramic field of view image of Doppler data" at col. 4, line 2) and acquired from substantially co-planar, partially-overlapping spatial regions (as seen in figure 1, numeral 10, the composite image is created from substantially co-planar and partially-overlapping spatial regions).

Sumanaweera et al. does not disclose repeating the process to generate a second extended field of view image associated with a second phase of the physiological cycle from image data from multiple selected ones of the frames of (a) associated with the second phase of the physiological cycle and acquired from substantially co-planar, partially-overlapping spatial regions; and (d) displaying at least the first and second extended field of view images in sequence to a user.

Savord et al. teaches an ultrasonic imaging method comprising:

generating a first image from image data associated with a first phase of the physiological cycle ("combines the image data for the volume segments of the selected

cardiac phase to produce a three-dimensional image of the image volume" at col. 7, line 57);

generating a second image associated with a second phase of the physiological cycle from image data (three-dimensional image of a different selected cardiac phase; "Complete three-dimensional images of each cardiac phase are acquired in a relatively small number of heartbeats. When image data for all volume segments of the image volume has been acquired, the volume segment image data is combined in step 316 to provide a composite image for each of the cardiac phases" at col. 8, line 29);

displaying at least the first and second images in sequence to a user ("By incrementing the value in register 250, three-dimensional images of different cardiac phases may be displayed in sequence" at col. 7, line 59).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to utilize the multiple phase imaging and displaying of Savord et al. to present the image data of Sumanaweera et al. such that "successive cardiac phases can be displayed as a function of time to represent heart movement" (Savord et al. at col. 4, line 59) and relevant diagnostic information can be derived from the image data for better evaluation of the patient (see Savord et al. at col. 4, lines 56-67).

Regarding **claim 41**, Sumanaweera et al. discloses an ultrasonic imaging system, comprising:

means (figure 2, numerals 22, 24, 26 and 30, which are equivalent to applicant's disclosed transducer, beamformer and processors) for acquiring image data for a plurality of frames (figure 1, numerals 12-18), each frame identified with a respective

phase of a physiological cycle ("cardiac cycle" at col. 4, line 3) in an ultrasound study of the heart, each acquired image belongs to a particular phase in the heart cycle);

(b) means (figure 2, numerals 34 and 36, which are equivalent to applicant's disclosed memory and processor) for generating a first extended field of view image from image data associated with a first phase of the physiological cycle from multiple selected ones of the frames of (a) associated with the first phase of the physiological cycle ("Triggering based on the cardiac cycle or other means for selecting frames of data associated with particular portions of the cardiac cycle may be used to select appropriate frames for combination, such as for creating a panoramic field of view image of Doppler data" at col. 4, line 2) and acquired from substantially co-planar, partially-overlapping spatial regions (as seen in figure 1, numeral 10, the composite image is created from substantially co-planar and partially-overlapping spatial regions).

Sumanaweera et al. does not disclose an ECG module as the means for acquiring, repeating the process to generate a second extended field of view image associated with a second phase of the physiological cycle from image data from multiple selected ones of the frames of (a) associated with the second phase of the physiological cycle and acquired from substantially co-planar, partially-overlapping spatial regions; and (d) displaying at least the first and second extended field of view images in sequence to a user.

Savord et al. teaches an ultrasonic imaging method comprising:

means (figure 1, numeral 14, 20, 32, 34, which are equivalent to applicant's disclosed transducer, beamformer, processor and ECG) for generating a first image

from image data associated with a first phase of the physiological cycle ("combines the image data for the volume segments of the selected cardiac phase to produce a three-dimensional image of the image volume" at col. 7, line 57);

means (figure 1, numerals 28 and 32, which are equivalent to applicant's disclosed memory and processor) for generating a second image associated with a second phase of the physiological cycle from image data (three-dimensional image of a different selected cardiac phase; "Complete three-dimensional images of each cardiac phase are acquired in a relatively small number of heartbeats. When image data for all volume segments of the image volume has been acquired, the volume segment image data is combined in step 316 to provide a composite image for each of the cardiac phases" at col. 8, line 29);

means (figure 1, numeral 30, which is equivalent to applicant's disclosed display) for displaying at least the first and second images in sequence to a user ("By incrementing the value in register 250, three-dimensional images of different cardiac phases may be displayed in sequence" at col. 7, line 59).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to utilize the multiple phase imaging and displaying of Savord et al. to present the image data of Sumanaweera et al. such that "successive cardiac phases can be displayed as a function of time to represent heart movement" (Savord et al. at col. 4, line 59) and relevant diagnostic information can be derived from the image data for better evaluation of the patient (see Savord et al. at col. 4, lines 56-67).

Allowable Subject Matter

6. Claims 42-46 are allowed.
7. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record does not teach extracting a time reference based a *Doppler characteristic of the image data* and identifying each frame with a respective phase of a physiological cycle *based at least in part on the time reference*, as stated in claim 42, combined with other features and elements of the claim.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KATRINA FUJITA whose telephone number is (571)270-1574. The examiner can normally be reached on M-Th 8-5:30pm, F 8-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Werner can be reached on (571) 272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Katrina Fujita/
Examiner, Art Unit 2624

/Brian P. Werner/
Supervisory Patent Examiner, Art Unit 2624